Union of Concerned Scientists

**Before the Senate Energy and Technology Committee**
**Testimony on Michigan's Renewable Energy Future**
**Prepared by Energy Analyst Sam Gomberg**
**on behalf of the Union of Concerned Scientists**

March 18, 2014

Chairman Nofs and Members of the Senate Energy and Technology Committee
S-132 Capitol
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Chairman Nofs and Members of the Senate Energy and Technology Committee

Thank you for the opportunity to provide testimony as you consider Michigan's energy future and the role that renewable energy might play in meeting the state's electricity demand. The Union of Concerned Scientists (UCS) is a science-based nonprofit organization with a network of over 13,000 supporters in Michigan, including hundreds of scientists, economists, engineers and public health experts at local colleges and universities. Together, we put rigorous, independent science to work solving some of Michigan's most pressing problems.

We've been engaged in the discussion about Michigan's energy future for some time to help chart a path forward after Michigan's current renewable energy standard of 10 percent levels of in 2015. During the Governor's process in 2013, we provided technical information to the Michigan Public Service Commission in response to questions posed on the Michigan Energy website to help inform this discussion. We submitted more than 100 pages of information and our input was referenced through the MPSC's final report to the Governor. We've also recently published analyses that look at the economic vulnerability of Michigan's aging coal-fired power plants and the economic toll to Michigan consumers from importing and burning coal. And just last week, we released a report titled *Charting Michigan's Renewable Energy Future: Accelerating the transition to clean, affordable and reliable power*, on which I was the lead author. I'd like to briefly report on the findings of that analysis in my time here today, and the full report is included in the packets that we provided with our testimony.

Our findings are consistent with—and build on—the work of the Public Service Commission and the Governor's process to inform this discussion. It examines the economic and environmental benefits of Michigan's energy future under a strengthened commitment to renewable energy. In sum, we found that extending and strengthening Michigan's renewable electricity standard is vital to continue the state's successful transition toward a more reliable, affordable and cleaner energy future.

Currently, Michigan's utilities are increasing their amount of renewable electricity by about 1.5 percent each year until they reach 10 percent in 2015. Specifically our analysis shows that

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Michigan has ample renewable energy resources to continue to ramping up in-state renewable energy generation at the same 1.5 percent rate over the next 15 years to reach 32.5 percent by 2030. We find that this 32.5 percent by 2030 level can be achieved reliably and with virtually no additional cost to consumers. Further, it will provide significant economic benefits to Michigan while reducing pollution and $CO_2$ emissions from the electricity sector. Diversifying Michigan's electricity portfolio with renewable energy also reduces the state's exposure to a variety of risks stemming from its current overreliance on coal and growing overreliance on natural gas.

We used a well-respected electricity sector computer model designed by the Department of Energy to examine the impacts on consumers, the economy, and the environment of extending and strengthening Michigan's renewable electricity standard (RES). It is specifically designed to determine the least-cost mix of resources necessary to meet electricity demand every minute of every day under various policy scenarios.

Our findings show that Michigan can meet a 32.5 percent by 2030 renewable electricity standard with in-state resources and with virtually no increase in electricity sector costs compared to a more fossil-fuel reliant energy system that will remain once the current RES levels off at 10 percent next year. The difference in electricity sector costs between this business as usual case and the 32.5 percent renewable energy by 2030 case is just three tenths of one percent between now and 2030. In some years, average retail electricity rates are actually lower than under the business as usual scenario.

This result is consistent with data from real world renewable energy projects being developed in Michigan today. The price for renewable energy, particularly wind energy, has been rapidly declining and is quickly becoming one of the cheapest energy resources available, even when compared with Michigan's existing coal and natural gas fleets. Our analysis shows that with a stronger RES in place, this cost trend continues as investment is directed toward new clean energy resources in Michigan instead of spending ratepayer funds to burn more out-of-state coal and natural gas.

Further, developing Michigan's renewable energy resources drives billions of dollars in new capital investment. With wind energy development leading the way, Michigan would add an average of more than 550 megawatts of new renewable energy capacity each year through 2030 – totaling more than 9,000 megawatts over the next 15 years. This development represents an estimated net present value of $9.5 billion dollars in new capital investment, and when these renewable energy facilities are developed, they provide more than $520 million dollars annually from maintenance costs and lease payments to landowners. This renewable energy development could also provide more than $100 million dollars to local governments in new property tax revenue over the life of these facilities.

Our analysis also shows that pursuing a renewable electricity standard of 32.5 percent by 2030 reduces electricity sector CO2 emissions – which is critically important if we are to curtal the most dangerous impacts of climate change. Under this strengthened standard, CO2 emissions are reduced by more than 65 million tons between 2014 and 2030 which is about equal to the annual emissions of 15 average sized coal plants.

These declines in emissions provide an additional benefit of better preparing Michigan utilities for future climate change–related regulations. The federal EPA is required by the federal Clean Air Act to reduce carbon emissions nationwide. The EPA is now working to finalize standards for carbon emissions from new power plants and will soon propose rules to limit emissions from existing power plants. Under these rules, states will have the opportunity to develop and implement their own plans for achieving these federal standards. It is likely that EPA will allow states to use clean energy programs that reduce emissions—such as Michigan's renewable electricity standard—to count toward compliance with the power plant carbon standard. By strengthening its renewable electricity standard and driving the development of clean energy resources, Michigan will get a valuable head start on cutting $CO_2$ emissions and be better positioned to meet the federal standards in the most cost-effective way.

Finally, we cannot overlook the risk-mitigating benefits of diversifying the state's electricity portfolio with renewable energy. We strongly agree with previous statements made by the Public Service Commission and others that a more diverse electricity portfolio is a less risky portfolio. An overreliance on fossil fuels for electricity comes with a variety of risks. These risks include fuel price volatility, fuel availability, risks of increasing regulatory compliance costs, not to mention the public health, environmental and climate change risks that accompany the burning of fossil fuels. The natural gas supply crunch and electricity price volatility brought about by a colder than normal winter in the Eastern half of the country serves as a stark reminder of the economic and consumer risks of an overreliance on natural gas. Diversifying with renewable energy helps reduce Michigan's exposure to these risks and increase the reliability, affordability and sustainability of Michigan's electricity supply. But because the vast majority of these risks fall on consumers and not the utilities directly, diversification won't happen unless policies are enacted to continue to drive Michigan's renewable energy development.

Given all of the information submitted to date, including our analysis, the Governor's process, Public Service Commission reports and so forth, we firmly believe that we should be working this year to pass a bill that extends and strengthens Michigan's renewable electricity standard to meet 30 percent of more of electricity demand with renewable energy by 2030. It is achievable, affordable, and will drive significant economic, public health, and environmental benefits for Michigan and its residents. We encourage you and your fellow legislators to avoid delay – the evidence is in and renewable energy is good for Michigan.

Thank you for the opportunity to provide this testimony, and please don't hesitate to contact us if we can answer any questions or be of further assistance.

Sincerely,

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Documents accompanying this testimony:

1) *Charting Michigan's Renewable Energy Future: Accelerating the transition to clean, affordable, and reliable power*
2) *Michigan's Dependence on Imported Coal. Burning Coal Burning Cash: 2014 Update*

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FACT SHEET

BURNING COAL, BURNING CASH: 2014 UPDATE

# Michigan's Dependence on Imported Coal

The cost of importing coal is a drain on the economies of many states that rely heavily on coal-fired power. Thirty-seven states were net importers of coal from other states and nations in 2012. The scale of Michigan's annual coal import dependence is discussed here, along with ways to keep more of that money in-state through investments in energy efficiency and homegrown renewable energy.[1]

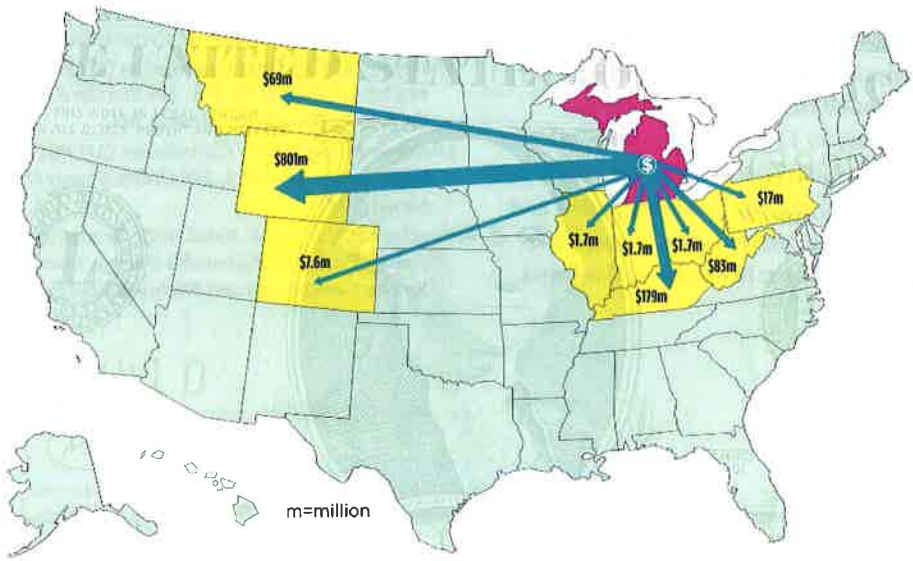
Despite having no in-state coal supplies, Michigan relied on coal for 49 percent of its in-state electricity generation in 2012 (EIA 2013). To supply that power, Michigan's power producers paid nearly $1.2 billion to import 21 million tons of coal from nine states, mainly from Wyoming. As a result, Michigan ranks sixth nationally, and first in the Midwest, for money spent on net coal imports.

DTE Energy, the state's largest power provider, sent $597 million out of Michigan to purchase coal in 2012—more than half the state's total. Consumers Energy, the state's second-largest utility, purchased $429 million in coal imports that year.

Michigan's dependence on coal generation has been declining as a result of flat power demand and the growth of cleaner, more affordable alternatives like natural gas and wind. From 2008 to 2012, natural gas generation in Michigan more than doubled from 8 percent to 20 percent as coal generation declined from 61 percent to 49 percent (EIA 2013). The tonnage of coal imported declined by 42 percent during this same period. Yet, coal expenditures dropped by just 14 percent as the average price paid for coal in Michigan increased by 47 percent from $37.67 per ton to $55.22 per ton.

While switching from coal to natural gas offers some near-term air quality and cost benefits, there is growing evidence that an overreliance on natural gas poses significant and complex risks to consumers, the economy, public health and safety, land and water resources, and the climate (Fleischman, Sattler, and Clemmer 2013). A better solution for consumers and the environment would be to replace more coal generation with renewable energy and energy efficiency.

FIGURE 1 Nearly $1.2 Billion Leaving Michigan to Pay for Imported Coal




*The nearly $1.2 billion spent to import coal is a drain on Michigan's economy, which relies on coal for 49 percent of its power generation. Investments in homegrown renewable energy and energy efficiency can affordably help redirect funds into local economic development—funds that would otherwise leave the state.*

Note: Based on 2012 data. Not all these funds will necessarily land in the state where the mining occurs. Mine owners may divert the profits to parent companies in other locations, for example. Amounts also include the cost of transportation.

## Clean Energy Can Boost Michigan's Energy Independence

Investing in homegrown renewable energy is a smart and responsible solution to reducing Michigan's dependence on imported coal and keeping more money in the local economy. Michigan has a wealth of renewable energy resources like wind, solar, and bioenergy; yet these resources supplied just 4.4 percent of the state's power in 2011. Utilities are on track to meet a requirement to produce 10 percent of the state's power needs from renewable energy by 2015 at lower costs than originally expected due largely to falling wind power prices (MI PSC 2013a). But Michigan can do much more.

A recent report from the Governor's staff found that Michigan could cost effectively achieve at least 30 percent renewable energy with in-state resources while maintaining reliability (Quackenbush and Bakal 2013). Increasing the renewable energy standard to this level would place Michigan among the national leaders (of the 28 other states with similar standards, 17 have targets of 20 percent or more) and build on the $1.8 billion that has already been invested in local renewable energy projects through 2012 (MI PSC 2013a).

Michigan also took an important step to tap into its tremendous energy efficiency potential in 2008 by requiring utilities to reduce electricity use, ramping up to an annual savings of 1 percent by 2012. The policy has been a success—in 2012, electric utilities exceeded their annual targets and achieved lifecycle savings of at least $936 million in energy costs, a savings of more than $4 for every dollar invested in energy efficiency (MI PSC 2013b).

Twenty-three other states have adopted similar power-saving targets, with several committing to annual savings of at least 2 percent. A 2013 analysis commissioned by Michigan's Public Service Commission found that utilities could cost effectively reduce electricity use by 1.7 percent per year over the next 10 years (or 17 percent total) (GDS Associates, Inc. 2013). This commitment could strengthen local economies, and save consumers up to $13 billion during that time. It could also further reduce money leaving Michigan to pay for coal imports.

*Michigan's renewable energy and energy efficiency standards are effectively and affordably spurring in-state clean energy development, which can help reduce the state's dependence on imported coal while creating jobs and other economic and environmental benefits. Photo source: R. Baranowski/NREL*

### ENDNOTES

1 *This fact sheet is based on the findings from an update of* Burning Coal, Burning Cash: Ranking the States That Import the Most Coal, *a 2010 analysis by the Union of Concerned Scientists. More information about our methodology and assumptions, as well as other state profiles, can be viewed at www.ucsusa.org/bcbc2014update.*

### REFERENCES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FIND THIS DOCUMENT ONLINE: www.ucsusa.org/bcbc2014update


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# Charting Michigan's Renewable Energy Future:

## *Accelerating the Transition to Clean, Affordable, and Reliable Power*

## Background

Using the *Regional Energy Deployment System* computer model developed by the U.S. Department of Energy, the Union of Concerned Scientists examined the impacts on consumers, the economy, and the environment of extending and strengthening Michigan's renewable electricity standard (RES). UCS studied three scenarios:

1. Increasing Michigan's RES to 32.5% by 2030;
2. Increasing Michigan's RES to 17.5% by 2020; and,
3. No extension or strengthening of Michigan's current 10% by 2015 RES (after leveling off in 2015, the current RES will not drive additional renewable energy development in Michigan).

## Key Findings

### 32.5% by 2030 is Achievable at Virtually No Increase in Electricity Costs

- Michigan can affordably and reliably meet 32.5% of its electricity needs with in-state renewable energy resources by 2030 with just a 0.3% increase in electricity costs between 2014 and 2030.

### Significant Benefits of Shifting from Fossil Fuels to Renewables

- A 32.5% RES would drive more than $9.5 billion in new capital investments from 2014 to 2030.
- Instead of spending ratepayer funds to burn more coal and natural gas, a stronger RES redirects these funds towards investment in new clean energy resources in Michigan.
- Shifting to renewables lowers Michigan's exposure to the economic, health, and environmental risks of over-relying on coal or natural gas.
- By 2030, renewable energy facilities would further boost Michigan's economy by adding nearly $570 million annually in maintenance payments and more than $21 million in lease payments to land owners.
- A more modest 17.5% by 2020 RES significantly reduces these benefits without reducing costs.

### Sustained Development of Michigan's Renewable Energy Resources

- Michigan would add more than 550 megawatts (MW) of new renewable energy capacity per year, totaling nearly 9,400 MW by 2030, establishing Michigan as a national clean energy leader.

### Reduced Carbon Dioxide Emissions

- A 32.5% RES would cut carbon dioxide emissions by more than 65 million tons from by 2030 – equivalent to the annual emissions of 15 typical (600 MW) coal plants – and put Michigan in a good position to cost-effectively comply with pending federal carbon regulations.

**Recommendation**: *Michigan should extend and strengthen its renewable energy standard to achieve at least 30% renewable energy by 2030. A 30% by 2030 RES is achievable, affordable and will provide significant benefits to Michiganders.*

Find the *Charting Michigan's Renewable Energy Future* report on UCS's website at: www.ucsusa.org.
For more information, contact LuCinda Hohmann at lhohmann@ucsusa.org or (312) 578-1750.

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# Renewables Could Meet Nearly a Third of Michigan's Energy Needs

*Tripling of In-state Production Affordable, Spur Billions in New Investment*

CHICAGO (March 12, 2013) – Michigan can meet nearly a third of its electricity needs by tripling power produced from in-state renewable energy sources by 2030 at virtually no additional cost to consumers, all while maintaining reliability and spurring billions of dollars of investment in the state, according to a Union of Concerned Scientists (UCS) report released today.

By continuing to ramp up renewables at the same growth rate as the current renewable energy standard (RES) —1.5 percent per year—Michigan could boost its in-state renewable energy production to 32.5 percent in 2030. Such a move would cut power plant carbon emissions and lower the state's exposure to the economic, health, and environmental risks of over-relying on coal or natural gas.

Ramping up renewables to such a level would come at virtually no increase in electricity costs, with consumers projected to pay just 0.3 percent more over the next 15 years. Instead of spending ratepayer funds to burn more coal and natural gas, UCS's analysis shows that a stronger RES would redirect these funds toward investment in new renewable energy resources to meet the strengthened RES.

"Further diversifying Michigan's electricity mix with renewable energy fits squarely with Governor Snyder's goals of an affordable, reliable, and adaptable electricity system that also protects of the environment," said Sam Gomberg, a UCS energy analyst and the report's author. "And we can do it while driving investments in Michigan communities."

Utilities are well on their way toward meeting Michigan's current RES, which requires 10 percent of the state's electricity to come from renewable energy by 2015. The RES is set to expire at the end of next year, and the UCS analysis finds that strengthening and extending the standard would reap significant economic and environmental benefits for Michigan.

This higher standard would inject more than $9.5 billion in new capital investment into Michigan's economy between 2016- 2030. Such investment would also generate

millions of dollars in new tax revenue, expenditures on facility operation and maintenance, and wind power land lease payments for local communities.

The findings of the analysis are consistent with a report delivered last year to Gov. Rick Snyder (R) by the Michigan Public Utility Commission and Michigan Energy Office that concluded the state could cost-effectively boost its renewable electricity standard to at least 30 percent with in-state resources while maintaining the reliability of the state's power supply. In December, Snyder announced clean energy goals for Michigan that included increasing the state's use of renewable energy.

"The state's current RES has been a success, cost-effectively driving new renewable energy development and providing important economic, public health, and environmental benefits in the process," said Gomberg. "Absent further policy action, however, this momentum will stall, leaving Michigan's vast renewable energy resources largely untapped and making the state increasingly vulnerable to the many risks associated with an overreliance on coal and natural gas."

The report also examined a more modest scenario of a standard calling for a 1.5 percent growth per year, but stabilizing at 17.5 percent by 2020. This policy scenario achieves a fraction of the benefits of a stronger 32.5 percent by 2030 RES while average electricity prices would remain largely the same.

"In the last several years, Michigan has built strong momentum in transitioning toward a clean energy economy," said Steve Frenkel, UCS's Midwest Office director. "The state legislature should continue that momentum by passing a law this year increasing the RES to at least 30 percent by 2030.

"Michigan has the resources, technologies, skills, and experience to be a national leader in renewable energy. With thoughtful and determined political leadership, it can maximize the economic, public health and environmental benefits of a clean and reliable energy future."

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